

REMARKS

Claims 1 and 3-13 are pending in this application. In the Office Action, claim 1 is objected to; claim 1 is rejected under 35 U.S.C. §112; claims 1-3 and 8-13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting; claim 1 is rejected under 35 U.S.C. §102; and claims 1-13 are rejected under 35 U.S.C. §103. By this Amendment, claims 1 and 3 are amended, and claim 2 is canceled. Reconsideration of the application based upon the above amendments and the following remarks is respectfully requested.

I. Objection to Claim 1

Applicants have corrected the spelling of asymmetric. Accordingly, Applicants respectfully request withdrawal of the objection.

II. Rejection Under 35 U.S.C. §112, Second Paragraph

The Office Action rejects claim 1 under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants respectfully traverse the rejection.

In claim 1, Applicants have rewritten the claim recitations by avoiding the use of numerous brackets and to improve clarity of the claim language.

Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

III. Provisional Rejection of Double Patenting

The Office Action provisionally rejects claims 1-3 and 8-13 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 11/795,035. Applicants have amended claim 1 to limit the catalyst used for the catalytic asymmetric hydrogenation to be a complex of ruthenium or iridium having an optically active phosphine ligand. On the other hand, claim 1 of

Application No. 11/795,035 recites that the metal is limited to rhodium. Claim 1 of the cited application would not have rendered obvious the use of a complex ruthenium or iridium, as claimed. Therefore, reconsideration and withdrawal of the provisional rejection is respectfully requested.

IV. Rejection Under 35 U.S.C. §102(b)

The Office Action rejects claim 1 under 35 U.S.C. §102(b) as being anticipated by JP-956 (JP-A 02-172956). Applicants respectfully traverse the rejection.

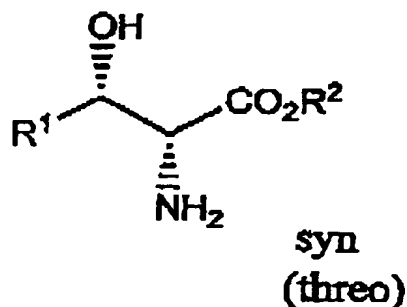
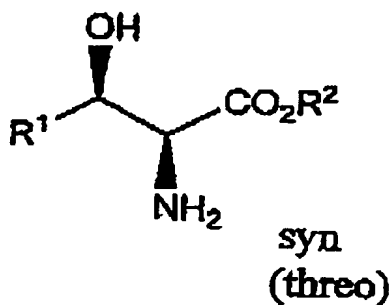
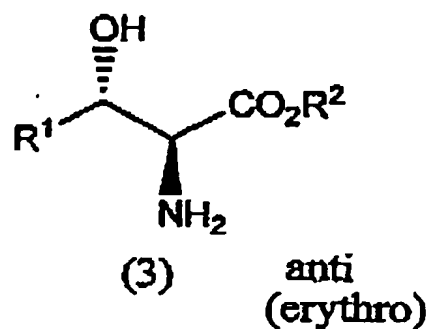
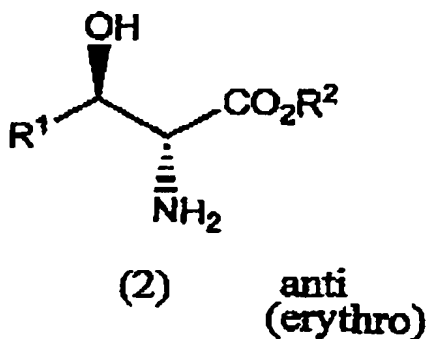
Applicants have amended claim 1 to include all limitations of claim 2, which was not rejected under 35 U.S.C. §102(b), and further limited the Group VIII transition metal of the Periodic Table to ruthenium or iridium. Therefore, claim 1 is allowable over JP-956, and dependent claims 3-13 are also allowable by virtue of their dependence from allowable base claim 1.

Accordingly, claim 1 is not anticipated by JP-956. Reconsideration and withdrawal of the rejection are respectfully requested.

V. Rejection Under 35 U.S.C. §103(a)

The Office Action rejects claims 1-13 under 35 U.S.C. §103(a) as being unpatentable over JP-956 in view of Noyori (Noyori et al.) and JP-617 (JP-A 06-080617). Applicants respectfully traverse the rejection.

The present invention is directed to a process for selectively producing one of the compounds of formula (2) or (3) among the following four kinds of isomers by a catalytic reduction in the presence of ruthenium or iridium catalyst:



Such a process would not have been rendered obvious by the cited references.

Regarding JP-056, the Office Action acknowledges that "JP-956 differs from the current process in that the use of Group VIII metal complex with phosphine ligand is not required." Also, Applicants respectfully point out that JP-956 merely discloses that erythro-DOPS derivative (I) can be obtained by reduction using catalysts, which are exemplified as a platinum catalyst such as platinum oxide; a palladium catalyst such as palladium-carbon; a nickel catalyst such as Raney-nickel; and a rhodium catalyst such as triphenylphosphine dichlororhodium (page 383). Further, JP-956 merely discloses that in order to obtain an optically active erythro-DOPS derivative (I), a catalytic reduction using a rhodium catalyst is preferable (top-left column of page 384). Therefore, JP-956 does not disclose or suggest the

use of a complex of ruthenium or iridium having an optically active phosphine ligand, as required in independent claim 1.

Example 3 of JP-956 discloses that a rhodium catalyst was used, and that the obtained compound's anti-form versus syn-form was 99/1 (page 386). That is, Example 3 shows that the anti-form was selectively produced by using rhodium catalyst. However, in Example 3, the enantio selectivity between two kinds of anti-form products, which corresponds to the selectivity between the compounds of formulae (2) and (3) of the present claim 1, was only 12.3% ee (page 386).

To the contrary, according to the present invention, one of the compounds of formula (2) or (3) is selectively produced, by a catalytic reduction in the presence of ruthenium or iridium catalyst. For example, Examples 33-43 show that the optically active compound of formula (2) or (3) can be arbitrarily and selectively produced with de: 57-99% and ee: 40-97% by using hydrochloric acid as the acid, and de: 94% and ee: 22% by using p-toluenesulfonic acid as the acid. Because all 75 Examples of the present specification show significantly superior enantio selectivity, the claimed invention provides unexpected results that are not taught or even attainable by the cited references.

Noyori discloses only syn-form production by a catalytic reduction (page 81). Likewise, JP-617 discloses only syn-form production by a catalytic reduction, and anti-form can be obtained only by reversing the syn-form product produced by the reduction (page 7). Because neither Noyori nor JP-617 teaches selective production of an optically active anti-form of formulae (2) or (3) by a catalytic reduction in the presence of ruthenium or iridium catalyst, even if Noyori and JP-617 are combined with JP-956, there is no showing of a reason or rationale why a person of ordinary skill in the art would have made the present invention based on the teaching of JP-956, Noyori and JP-617 with any reasonable expectation of success.

Therefore, it would not have been obvious from JP-956 in view of Noyori and JP-617 that the ruthenium and iridium catalyst are useful for the selective production of an optically active anti-form of formulae (2) or (3).

For the foregoing reasons, claim 1 is allowable over JP-956, Noyori and JP-617. Claims 3-13 directly or indirectly depend from claim 1. Therefore, dependent claims 3-13 are allowable by virtue of their dependence from allowable claim 1.

Accordingly, reconsideration and withdrawal of the rejection is respectfully requested.

VI. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of this application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Date: October 13, 2009

Attachment:
Petition for Extension of Time

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